ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

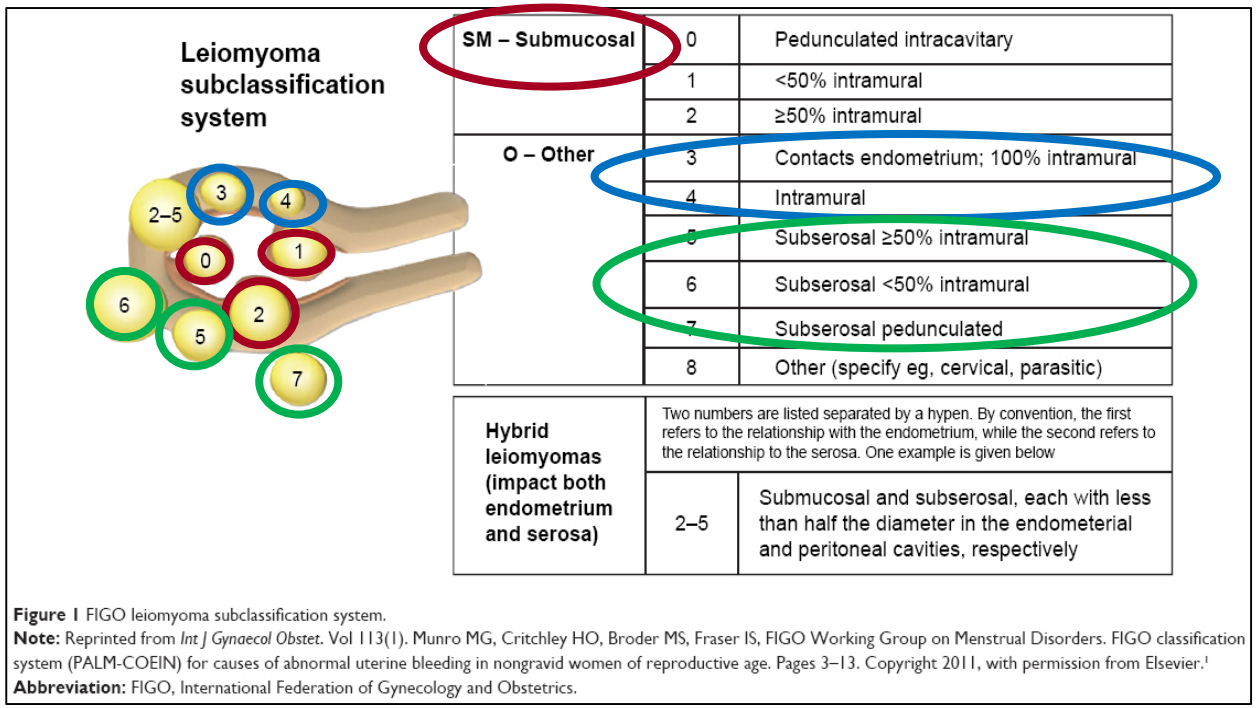
Miomectomia isteroscopica e laparoscopica: outcome riproduttivo

Renato Seracchioli

Surgical approach to Uterine Myomas in women with reproductive expectancies

- Myomas and fertility.
- Does myomectomy improve fertility outcomes
- Does myomectomy improve IVF outcomes
- Surgical technique?
- Strategies to improve our surgery
- And after surgery? Pregnancy after myomectomy

Impact on fertility



Leiomyoma subclassification system

SM – Submucosal	0	Pedunculated intracavitary
	1	<50% intramural
	2	≥50% intramural
O – Other	3	Contacts endometrium; 100% intramural
	4	Intramural
	5	Subserosal ≥50% intramural
	6	Subserosal <50% intramural
	7	Subserosal pedunculated
	8	Other (specify eg, cervical, parasitic)
Hybrid leiomyomas (impact both endometrium and serosa)	Two numbers are listed separated by a hypen. By convention, the first refers to the relationship with the endometrium, while the second refers to the relationship to the serosa. One example is given below	
	2–5	Submucosal and subserosal, each with less than half the diameter in the endometerial and peritoneal cavities, respectively

Figure 1 FIGO leiomyoma subclassification system.
Note: Reprinted from *Int J Gynaecol Obstet.* Vol 113(1). Munro MG, Critchley HO, Broder MS, Fraser IS, FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Pages 3–13. Copyright 2011, with permission from Elsevier.[1]
Abbreviation: FIGO, International Federation of Gynecology and Obstetrics.

SUBMUCOSAL

INTRAMURAL

SUBSEROSAL

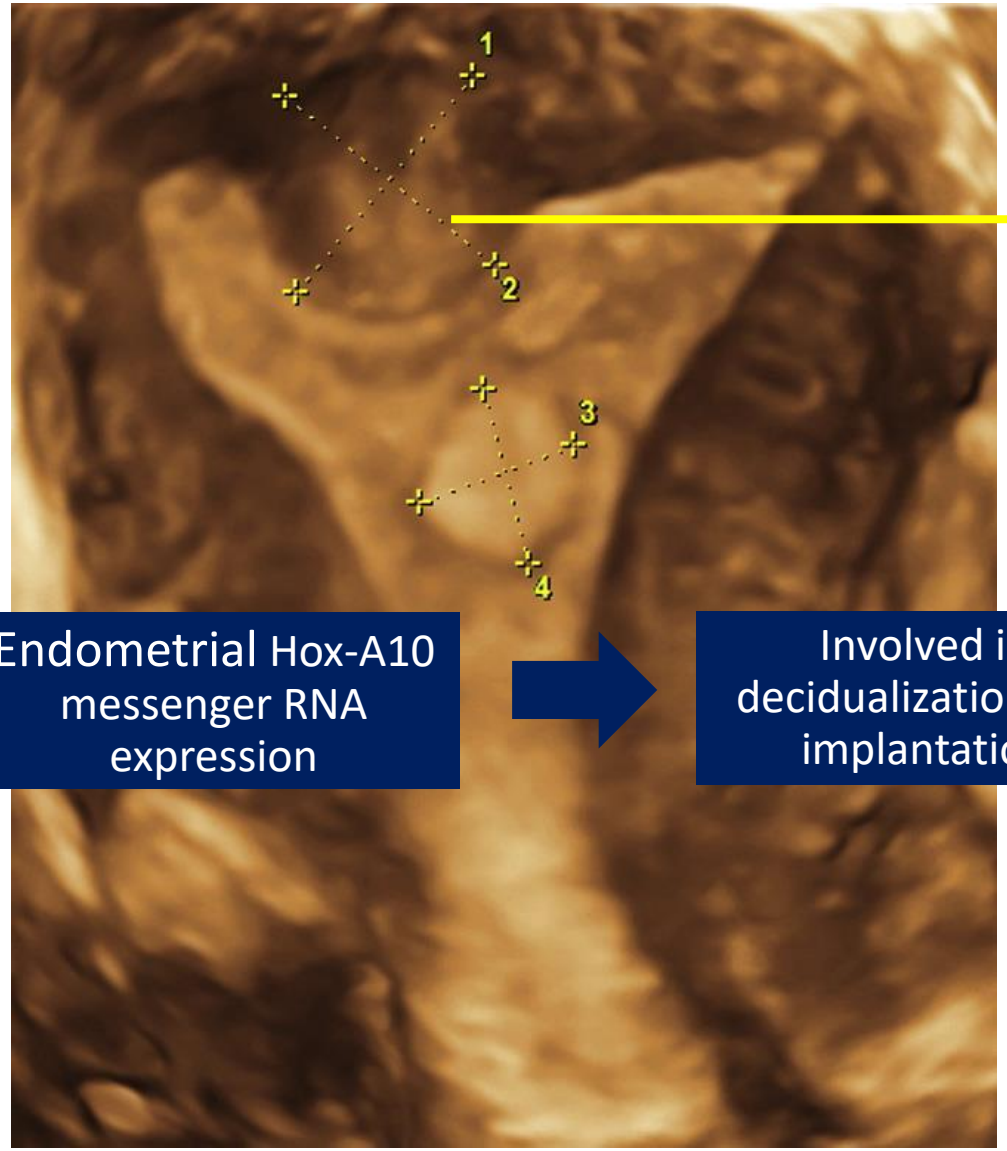
SOGC CLINICAL PRACTICE GUIDELINE

No. 321, March 2015

The Management of Uterine Fibroids in Women With Otherwise Unexplained Infertility

- Subserosal fibroids do not appear to have an impact on fertility
- All systematic reviews and meta-analyses agreed on this point.
- Removal of subserosal fibroids is not recommended. (III-D)

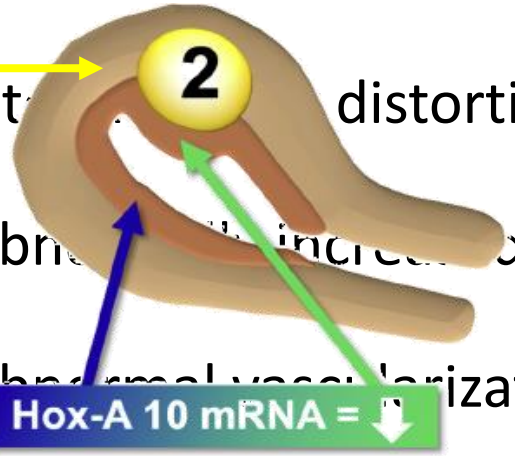
Impact on fertility



Endometrial Hox-A10 messenger RNA expression

Involved in decidualization and implantation

SUBMUCOSAL



✓ Ut… distortic

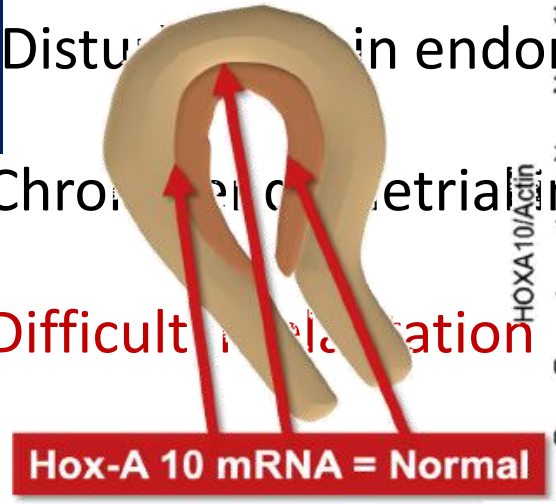
✓ Abn… incre… d

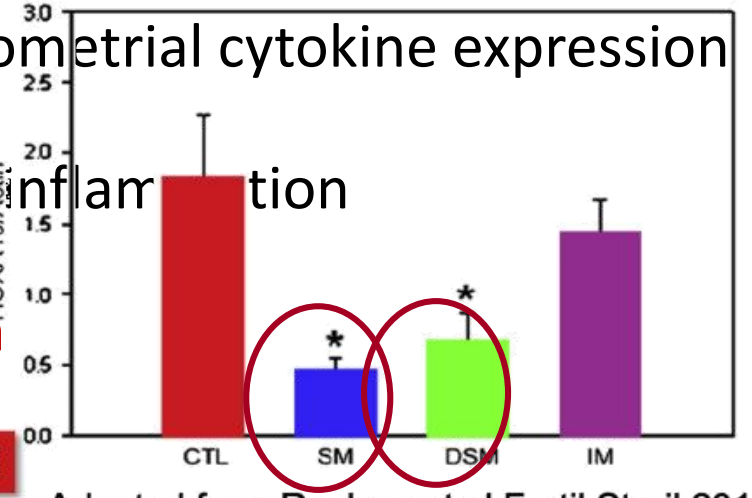
✓ A…rizat

Distu… in endometrial cytokine expression

✓Chro… etrial inflam… tion

✓Difficult… ation





Adapted from Rackow et al Fertil Steril 2010

From Munro et al, Fert Ster, 2019

Impact on fertility

Fibroids and infertility: an updated systematic review of the evidence

Elizabeth A. Pritts, M.D.,[a] *William H. Parker, M.D.,*[b] *and David L. Olive, M.D.*[a]

2009

TABLE 2

Effect of fibroids on fertility: all locations.

Outcome	Number of studies/substudies	Relative risk	95% confidence interval	Significance
Clinical pregnancy rate	18	0.849	0.734–0.983	$P=.029$
Implantation rate	14	0.821	0.722–0.932	$P=.002$
Ongoing pregnancy/live birth rate	17	0.697	0.589–0.826	$P<.001$
Spontaneous abortion rate	18	1.678	1.373–2.051	$P<.001$
Preterm delivery rate	3	1.357	0.607–3.036	Not significant

Pritts. Fibroids and infertility. Fertil Steril 2009.

TABLE 3

Effect of fibroids on fertility: submucous fibroids.

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
Clinical pregnancy rate	4	0.363	0.179–0.737	$P=.005$
Implantation rate	2	0.283	0.123–0.649	$P=.003$
Ongoing pregnancy/live birth rate	2	0.318	0.119–0.850	$P<.001$
Spontaneous abortion rate	2	1.678	1.373–2.051	$P=.022$
Preterm delivery rate	0	—	—	—

Pritts. Fibroids and infertility. Fertil Steril 2009.

TABLE 4

Effect of fibroids on fertility: no intracavitary involvement.

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
Clinical pregnancy rate	24	0.897	0.800–1.004	Not significant
Implantation rate	14	0.792	0.696–0.901	$P<.001$
Ongoing pregnancy/live birth rate	16	0.780	0.690–0.883	$P<.001$
Spontaneous abortion rate	16	1.891	1.473–2.428	$P<.001$
Preterm delivery rate	2	2.767	0.797–9.608	Not significant

Pritts. Fibroids and infertility. Fertil Steril 2009.

Impact on fertility

Human Reproduction Update, Vol.13, No.5 pp. 465–476, 2007
Advance Access publication June 21, 2007

Fibroids and female reproduction: a critical analysis of the evidence

E. Somigliana[1,2], P. Vercellini[1,2,3,4], R. Daguati[1,2,3], R. Pasin[1,3], O. De Giorgi[1,2] and P.G. Crosignani[1,3]

Table 3: Meta-analyses on the influence of fibroids on IVF outcome according to the localization of the lesions

Localization	Number of studies included[a]	Breslow–Day test (*P*-value)	Common OR (95% CI)
Clinical pregnancy rate			
Submucosal	2	0.92	0.3 (0.1–0.7)
Intramural	7	0.38	0.8 (0.6–0.9)
Subserosal	3	0.92	1.2 (0.8–1.7)
Intramural and/or subserosal	11	0.30	1.0 (0.8–1.2)
All types	16	0.24	0.8 (0.7–1.0)
Delivery rate			
Submucosal	2	0.79	0.3 (0.1–0.8)
Intramural	7	0.09	0.7 (0.5–0.8)
Subserosal	3	0.94	1.0 (0.7–1.5)
Intramural and/or subserosal	11	0.68	0.9 (0.7–1.1)
All types	16	0.43	0.8 (0.6–0.9)

PREGNANCY RATE

- **Submucosal → big impact**
- **Intramural → low impact**
- **Subserosal → no impact**

Impact on fertility

SUBMUCOSAL

Definite impact on fertility

INTRAMURAL

SUBSEROSAL

No impact on fertility

Impact on fertility

Fibroids and infertility: an updated systematic review of the evidence 2009

First meta-analysis

TABLE 5

Effect of fibroids on fertility: intramural fibroids.

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
A. All studies				
Clinical pregnancy rate	12	0.810	0.696–0.941	$P=.006$
Implantation rate	7	0.684	0.587–0.796	$P<.001$
Ongoing pregnancy/live birth rate	8	0.703	0.583–0.848	$P<.001$
Spontaneous abortion rate	8	1.747	1.226–2.489	$P=.002$
Preterm delivery rate	1	6.000	0.309–116.606	Not significant
B. Prospective studies				
Clinical pregnancy rate	3	0.708	0.437–1.146	Not significant
Implantation rate	2	0.552	0.391–0.781	$P=.001$
Ongoing pregnancy/live birth rate	2	0.465	0.291–0.744	$P=.019$
Spontaneous abortion rate	2	2.384	1.110–5.122	$P=.002$
Preterm delivery rate	0	—	—	—
C. Studies using hysteroscopy in all subjects				
Clinical pregnancy rate	2	0.845	0.666–1.071	Not significant
Implantation rate	1	0.714	0.547–0.931	$P=0.013$
Ongoing pregnancy/live birth rate	2	0.733	0.383–1.405	Not significant
Spontaneous abortion rate	2	1.215	0.391–3.774	Not significant
Preterm delivery rate	1	6.000	0.309–116.606	Not significant

Fritz. Fibroids and infertility. Fertil Steril 2009.

The effect of intramural fibroids without uterine cavity involvement on the outcome of IVF treatment: a systematic review and meta-analysis

Sesh Kamal Sunkara[1], Mohammed Khairy, Tarek El-Toukhy, Yacoub Khalaf, and Arri Coomarasamy

Human Reproduction, Vol.25, No.2 pp. 418–429, 2010

Live Birth

Figure 3 Forest plot of studies of non-cavity-distorting intramural fibroids ... birth rates.

Second meta-analysis

Reproductive BioMedicine Online (2011) 23, 2 14

ELSEVIER

www.sciencedirect.com
www.rbmonline.com

SYMPOSIUM: REPRODUCTIVE SURGERY
REVIEW

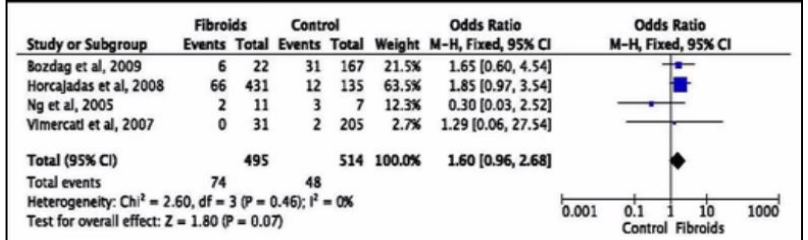
Is another meta-analysis on the effects of intramural fibroids on reproductive outcomes needed?

Mostafa Metwally [a,*], Cynthia M Farquhar [b], Tin Chiu Li [c]

Concern: Heterogeneity & Quality of studies included
Re-analysis: Include only high-quality studies

Third meta-analysis

IM fibroid & miscarriage rate



Study or Subgroup	Fibroids Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Bozdag et al, 2009	6	22	31	167	21.5%	1.65 [0.60, 4.54]
Horcajadas et al, 2008	66	431	12	135	63.5%	1.85 [0.97, 3.54]
Ng et al, 2005	2	11	3	7	12.3%	0.30 [0.03, 2.52]
Vimercati et al, 2007	0	31	2	205	2.7%	1.29 [0.06, 27.54]
Total (95% CI)		495		514	100.0%	1.60 [0.96, 2.68]
Total events	74		48			

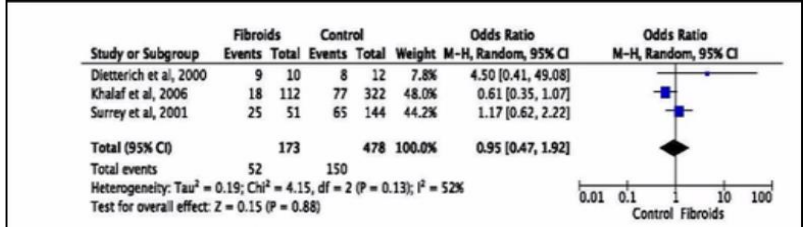
Heterogeneity: Chi² = 2.60, df = 3 (P = 0.46); I² = 0%
Test for overall effect: Z = 1.80 (P = 0.07)

Odds Ratio M-H, Fixed, 95% CI
0.001 0.1 1 10 1000
Control Fibroids

Figure 4 The effect of presence of intramural fibroids on the miscarriage rate after assisted conception.

Third meta-analysis

IM fibroid & LB rate



Study or Subgroup	Fibroids Events	Total	Control Events	Total	Weight	Odds Ratio M-H, Random, 95% CI
Dietterich et al, 2000	9	10	8	12	7.8%	4.50 [0.41, 49.08]
Khalaf et al, 2006	18	112	77	322	48.0%	0.61 [0.35, 1.07]
Surrey et al, 2001	25	51	65	144	44.2%	1.17 [0.62, 2.22]
Total (95% CI)		173		478	100.0%	0.95 [0.47, 1.92]
Total events	52		150			

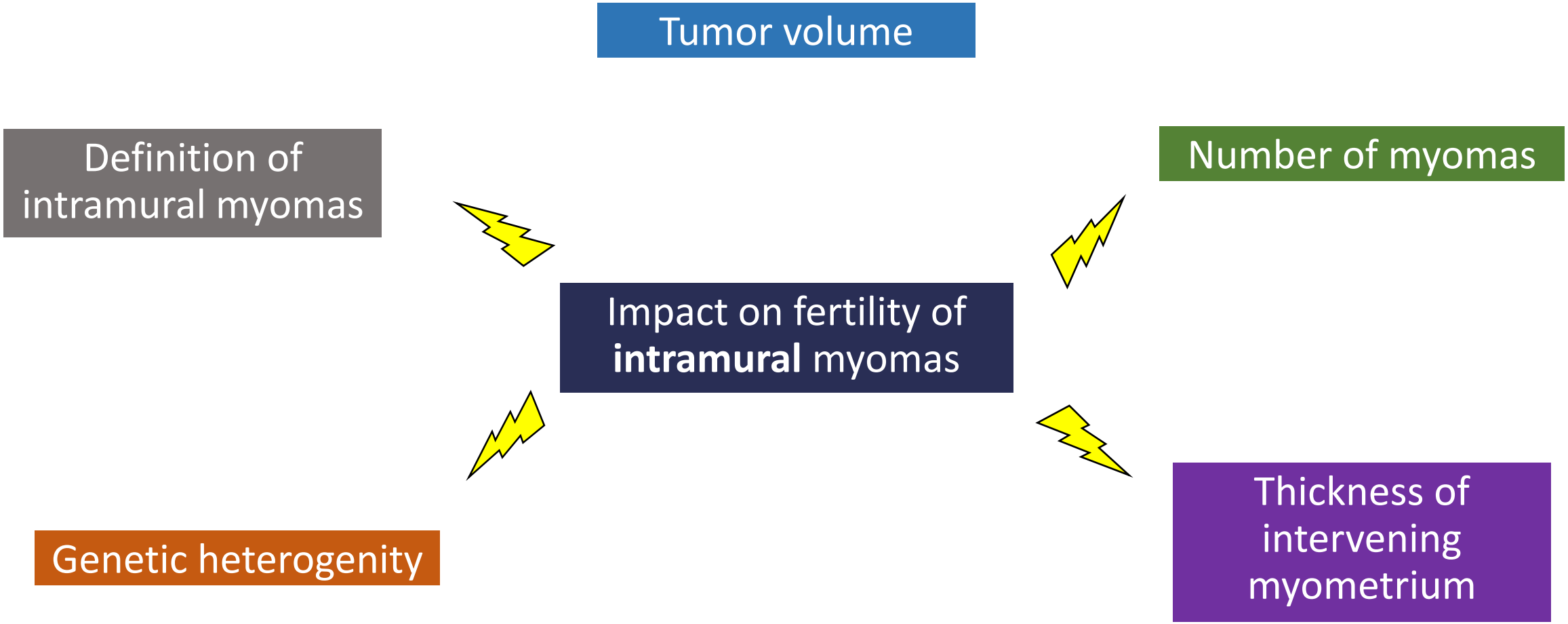
Heterogeneity: Tau² = 0.19; Chi² = 4.15, df = 2 (P = 0.13); I² = 52%
Test for overall effect: Z = 0.15 (P = 0.88)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Control Fibroids

Figure 2 The effect of presence of intramural fibroids on the live birth rate after assisted conception.

Third meta-analysis

“Confounders factors”



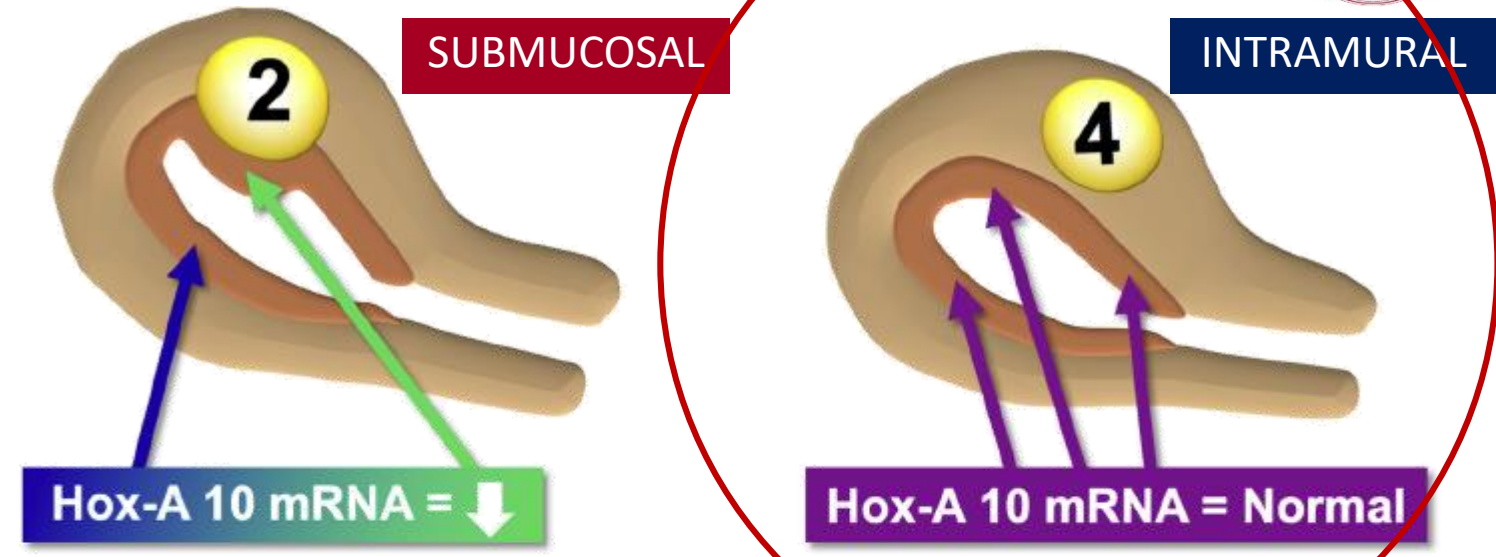
Low grade evidence, few studies

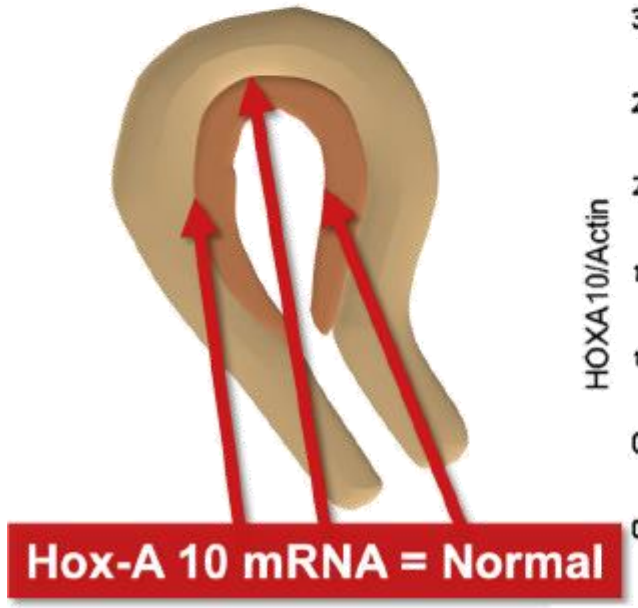
From Munro et al, Fert Ster, 2019

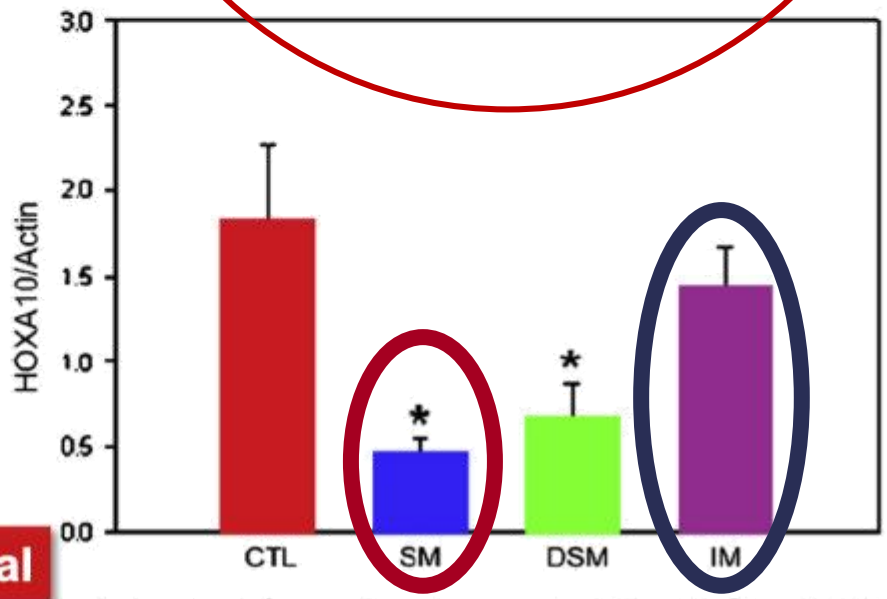
Impact on fertility

Endometrial Hox-A10 messenger RNA expression

Involved in decidualization and implantation

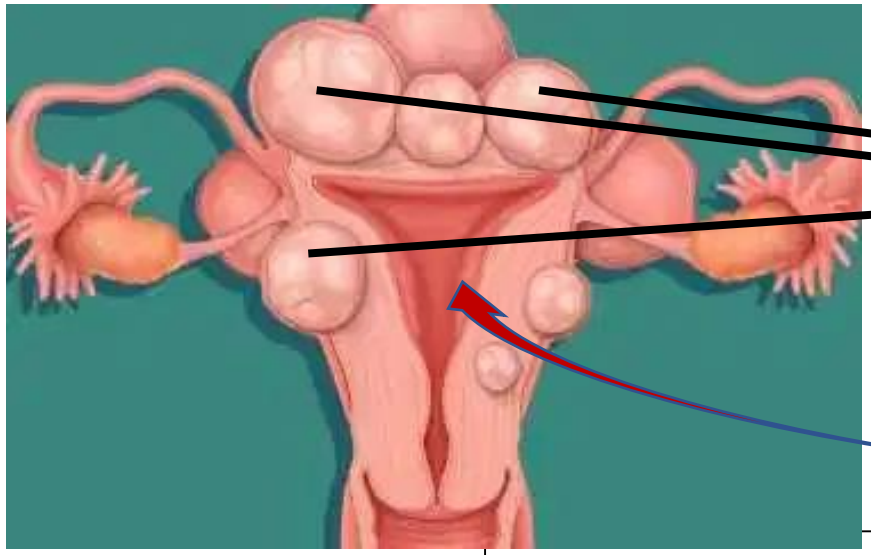






Adapted from Rackow et al Fertil Steril 2010

From Munro et al, Fert Ster, 2019



>TGF-Beta

Bone morphogenic protein
type 1 and 2 receptors

Fertil Steril. 2015 March ; 103(3): 845–852. doi:10.1016/j.fertnstert.2014.12.099.

Leiomyoma-Derived TGF-β Impairs BMP-2 Mediated Endometrial Receptivity

Leo F Doherty, MD and Hugh S Taylor, MD

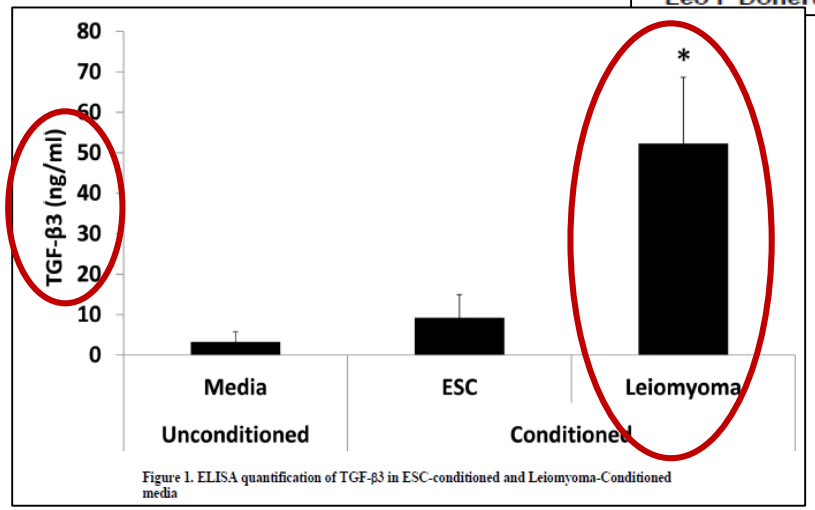
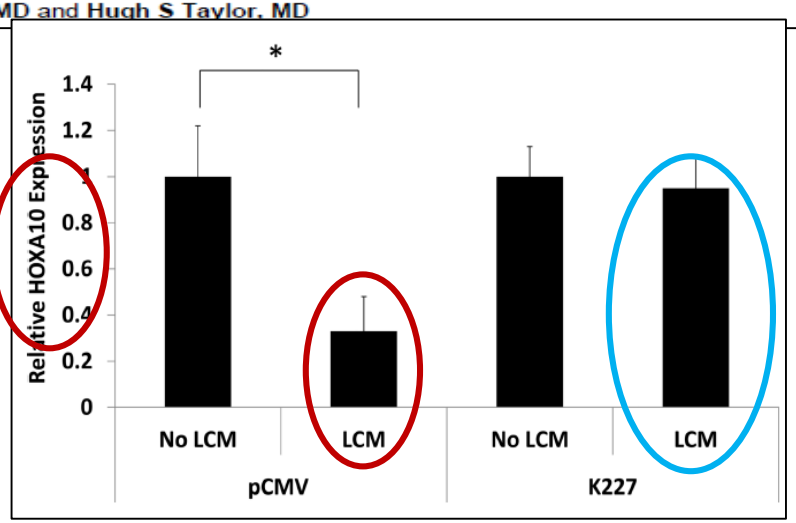


Figure 1. ELISA quantification of TGF-β3 in ESC-conditioned and Leiomyoma-Conditioned media



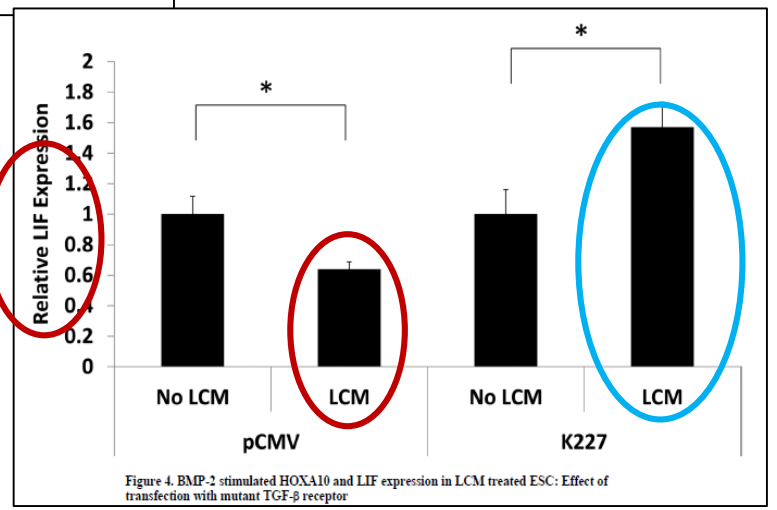


Figure 4. BMP-2 stimulated HOXA10 and LIF expression in LCM treated ESC: Effect of transfection with mutant TGF-β receptor

Conclusions—

- Leiomyoma derived TGF-β was necessary and sufficient to alter endometrial BMP-2 responsiveness.
- Blockade of TGF-β prevents repression of BMP-2 receptors and restores BMP-2 stimulated expression of HOXA10 and LIF.
- Blockade of TGF signaling is a potential strategy to improve infertility and pregnancy loss associated with uterine leiomyoma.

Impact on fertility

Effect of large intramural fibroids (>5 cm)

Hart R et al Hum Reprod 2001 16: 2411

IVF Outcome

Implantation rate	reduced from	20.2 to 11.9 %	(p=0.018)
Pregnancy rate	reduced from	34.1 % to 23.3 %	(p=0.016)
Ongoing PR	reduced from	28.3 to 15.1 %	(p=0.003)

Large intramural myoma negatively affects outcome after IVF

Fibroids not encroaching the endometrial cavity and IVF success rate: a prospective study

Edgardo Somigliana[1,*], Silvia De Benedictis[1,2], Paolo Vercellini[1,2], Anna Elisa Nicolosi[1], Laura Benaglia[1,2], Claudia Scarduelli[1], Guido Ragni[1], and Luigi Fedele[1,2]

Human Reproduction, Vol.26, No.4 pp. 834–839, 2011

119 cases and 119 controls

In asymptomatic patients selected for IVF, **small fibroids (<5cm) not encroaching the endometrial cavity did not affect clinical pregnancy and LB rates**

Impact on fertility

Effect of type 3 intramural fibroids on in vitro fertilization–intracytoplasmic sperm injection outcomes: a retrospective cohort study

Lei Yan, M.D., Ph.D., Qian Yu, M.D., Ya-nan Zhang, M.D., Zizhen Guo, M.D., Zhongyuan Li, M.D., Jinlei Niu, M.D., and Jinlong Ma, M.D., Ph.D.

INTRAMURAL

RETROSPECTIVE STUDY
151 patients with FIGO 3 myomas vs 453 matched controls

In vitro fertilization-intracytoplasmic sperm injection outcomes in the case and the control groups.

Outcome	Case	Control	*P* value	OR (95% CI)	*P* value[a]
Cancellation	33/151 (21.8)	69/453 (15.5)	.078	1.32 (0.81–2.17)	.267
Biochemical pregnancy	44/151 (29.1)	233/453 (51.4)	<.001	0.43 (0.29–0.64)	<.001
Clinical miscarriage	10/42 (23.8)	44/199 (22.1)	.839		
Clinical pregnancy	42/151 (27.8)	199/453 (43.9)	.001	0.53 (0.35–0.80)	.003
Implantation	55/242 (22.7)	264/768 (34.4)	.001		
Preterm delivery	3/151 (2.0)	15/453 (3.3)	.582		
Live birth	32/151 (21.2)	156/453 (34.4)	.002	0.57 (0.36–0.89)	.013
Singleton	25/151 (16.6)	116/453 (25.6)	.026	0.66 (0.41–1.07)	.093
Twin	7/151 (4.6)	40/453 (8.8)	.114	0.47 (0.20–1.12)	.09

Note: Data presented as n (%) and odds ratio (95% confidence interval). CI = confidence interval; OR = odds ratio.
[a] Logistic regression analysis was conducted by adjusting for us of "other protocol" of ovary stimulation.

Type 3 fibroids exert a negative impact on the rates of implantation, clinical pregnancy, and livebirth in patients undergoing IVF-ICSI, but do not significantly increase the clinical miscarriage rate, in particular for diameter > 2 cm

Impact on fertility

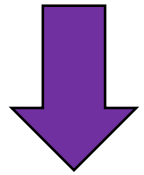
SUBMUCOSAL

Definite impact on fertility

INTRAMURAL

Controversial impact on fertility

SUBSEROSAL



No impact on fertility

TREATMENT ???

Surgical approach to Uterine Myomas in women with reproductive expectancies

- Myomas and fertility.
- Does myomectomy improve fertility outcomes?
- Surgical technique?
- Strategies to improve surgical outcomes
- And after surgery? Pregnancy after myomectomy

Does myomectomy improve fertility outcomes?

Fibroids and infertility: an updated systematic review of the evidence

2009

Elizabeth A. Pritts, M.D.,[a] *William H. Parker, M.D.,*[b] *and David L. Olive, M.D.*[a]

Effect of myomectomy on fertility: submucosal fibroids.

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
A. Controls: fibroids in situ (no myomectomy)				
Clinical pregnancy rate	2	2.034	1.081–3.826	*P*=.028
Implantation rate	0	–	–	
Ongoing pregnancy/live birth rate	1	2.654	0.920–7.658	Not significant
Spontaneous abortion rate	1	0.771	0.359–1.658	Not significant
Preterm delivery rate	0	–	–	–
B. Controls: infertile women with no fibroids				
Clinical pregnancy rate	2	1.545	0.998–2.391	Not significant
Implantation rate	2	1.116	0.906–1.373	Not significant
Ongoing pregnancy/live birth rate	3	1.128	0.959–1.326	Not significant
Spontaneous abortion rate	2	1.241	0.475–3.242	Not significant
Preterm delivery rate	0	–	–	–

Pritts. Fibroids and infertility. Fertil Steril 2009.

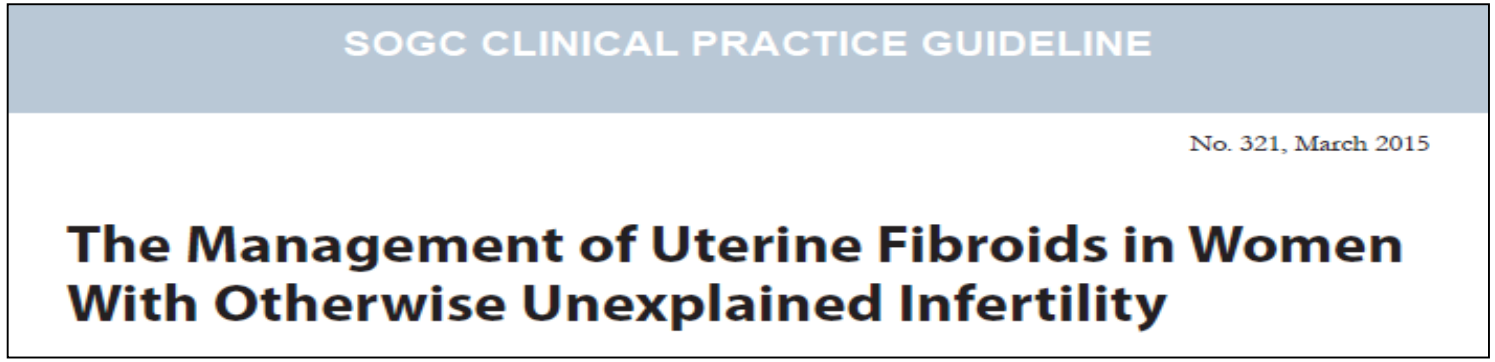
Effect of myomectomy on fertility: intramural fibroids (fibroids in situ controls).

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
Clinical pregnancy rate	2	3.765	0.470–30.136	Not significant
Implantation rate	0	–	–	–
Ongoing pregnancy/live birth rate	1	1.671	0.750–3.723	Not significant
Spontaneous abortion rate	1	0.758	0.296–1.943	Not significant
Preterm delivery rate	0	–	–	–

Pritts. Fibroids and infertility. Fertil Steril 2009.

Fertility outcomes are decreased in women with submucosal fibroids, and removal seems to confer benefit

- In patients with intramural fibroids, myomectomy seems no have influence in reproductive outcomes



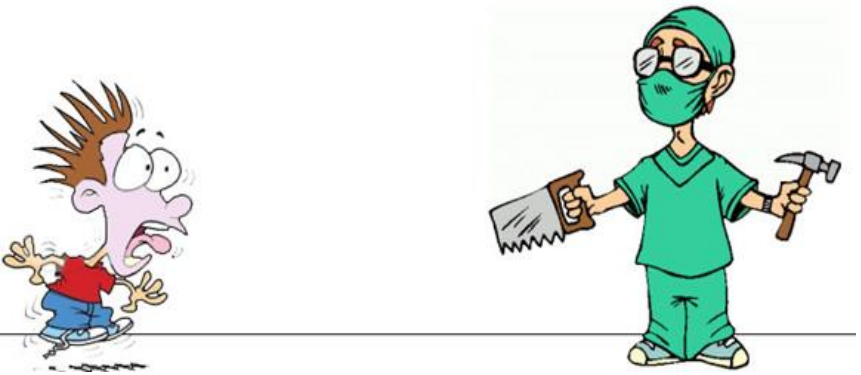
Recommendations

- In women with otherwise unexplained infertility, submucosal fibroids should be removed in order to improve conception and pregnancy rates. (II-2)
- Removal of subserosal fibroids is not recommended. (III-D)
- There is fair evidence to recommend against myomectomy in women with intramural fibroids (hysteroscopically confirmed intact endometrium) and otherwise unexplained infertility, regardless of the size of the fibroids. (II-2D) If the patient has no other options, the benefits of myomectomy should be weighed against the risks, and management of intramural fibroids should be individualized. (III-C)

Therapy

TREATMENT

- Surgery
- Medical
- Others



Treatment

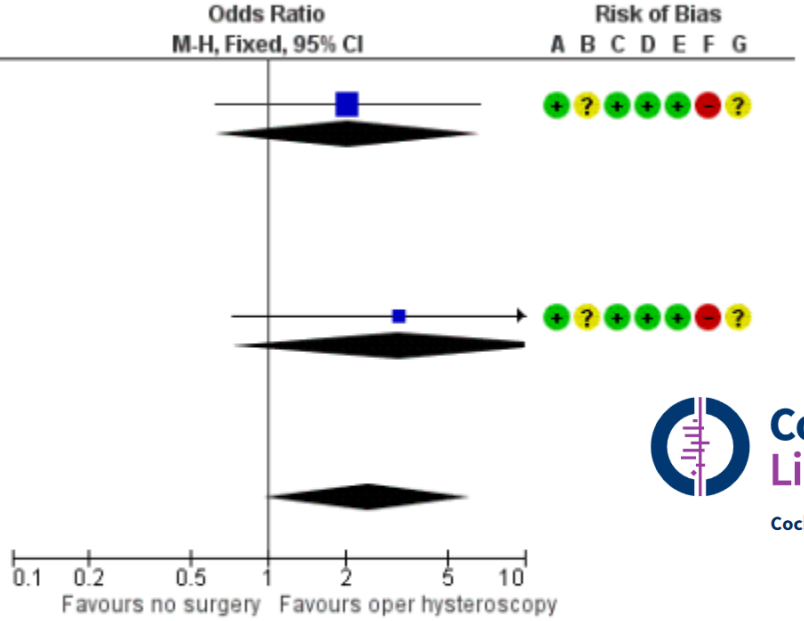
SUBMUCOSAL

Hysteroscopy for treating subfertility associated with suspected major uterine cavity abnormalities (Review)

Bosteels J, van Wessel S, Weyers S, Broekmans FJ, D'Hooghe TM, Bongers MY, Mol BWJ

Figure 4. Forest plot of comparison: 1 Hysteroscopic myomectomy vs no surgery in women with unexplained subfertility and submucous fibroids. Outcome: 1.1 Clinical pregnancy per woman randomised.

Study or Subgroup	Operative hysteroscopy Events	Total	No surgery Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
1.1.1 Removal of submucous fibroids only vs no surgery						
Casini 2006 (1)	13	30	6	22	66.2%	2.04 [0.62, 6.66]
Subtotal (95% CI)		**30**		**22**	**66.2%**	**2.04 [0.62, 6.66]**
Total events	13		6			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.18 (P = 0.24)						
1.1.2 Removal of mixed submucous-intramural fibroids vs no surgery						
Casini 2006 (2)	8	22	3	20	33.8%	3.24 [0.72, 14.57]
Subtotal (95% CI)		**22**		**20**	**33.8%**	**3.24 [0.72, 14.57]**
Total events	8		3			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.53 (P = 0.13)						
Total (95% CI)		**52**		**42**	**100.0%**	**2.44 [0.97, 6.17]**
Total events	21		9			
Heterogeneity: Chi² = 0.22, df = 1 (P = 0.64); I² = 0%						
Test for overall effect: Z = 1.89 (P = 0.06)						
Test for subgroup differences: Chi² = 0.22, df = 1 (P = 0.64), I² = 0%						



Footnotes

(1) The intervention was the hysteroscopic removal of fibroids. The comparison arm was no...

(2) The intervention was the hysteroscopic removal of fibroids. The comparison arm was no...

Risk of bias legend

(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

Cochrane Library
Cochrane Database of Systematic Reviews

p 0.06

From Boostels et al, Cochrane, 2018

Laparoscopic vs open myomectomy

Surgical treatment of fibroids for subfertility (Review)

Metwally M, Cheong YC, Horne AW

2012

THE COCHRANE COLLABORATION®

Figure 5. Forest plot of comparison: 2 Open versus laparoscopic myomectomy, outcome: 2.2 Clinical pregnancy rate.

Study or Subgroup	Laparoscopy Events	Laparoscopy Total	Laparotomy Events	Laparotomy Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Palomba 2007	8	30	8	32	27.6%	1.09 [0.35, 3.40]
Seracchioli 2000	30	56	33	59	72.4%	0.91 [0.44, 1.90]
Total (95% CI)		**86**		**91**	**100.0%**	**0.96 [0.52, 1.78]**
Total events	38		41			

Heterogeneity: Chi² = 0.07, df = 1 (P = 0.79); I² = 0%
Test for overall effect: Z = 0.13 (P = 0.89)

Odds Ratio M-H, Fixed, 95% CI
0.1 0.2 0.5 1 2 5 10
Laparotomy Laparoscopy

Figure 6. Forest plot of comparison: 2 Open versus laparoscopic myomectomy, outcome: 2.4 Miscarriage rate.

Study or Subgroup	Laparoscopy Events	Laparoscopy Total	Laparotomy Events	Laparotomy Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Palomba 2007	1	8	2	8	36.5%	0.43 [0.03, 5.98]
Seracchioli 2000	6	30	4	33	63.5%	1.81 [0.46, 7.18]
Total (95% CI)		**38**		**41**	**100.0%**	**1.31 [0.40, 4.27]**
Total events	7		6			

Heterogeneity: Chi² = 0.90, df = 1 (P = 0.34); I² = 0%
Test for overall effect: Z = 0.44 (P = 0.66)

Odds Ratio M-H, Fixed, 95% CI
0.01 0.1 1 10 100
Laparotomy Laparoscopy

Figure 4. Forest plot of comparison: 2 Open versus laparoscopic myomectomy, outcome: 2.1 Live birth rate.

Study or Subgroup	Laparoscopy Events	Laparoscopy Total	Laparotomy Events	Laparotomy Total	Weight	Odds Ratio M-H, Fixed, 95% CI
Palomba 2007	7	30	6	32	20.8%	1.32 [0.39, 4.50]
Seracchioli 2000	20	56	27	59	79.2%	0.66 [0.31, 1.39]
Total (95% CI)		**86**		**91**	**100.0%**	**0.80 [0.42, 1.50]**
Total events	27		33			

Heterogeneity: Chi² = 0.90, df = 1 (P = 0.34); I² = 0%
Test for overall effect: Z = 0.70 (P = 0.48)

Odds Ratio M-H, Fixed, 95% CI
0.1 0.2 0.5 1 2 5 10
Laparotomy Laparoscopy

Figure 7. Forest plot of comparison: 2 Open versus laparoscopic myomectomy, outcome: 2.5 Caesarean section rate.

Study or Subgroup	Laparoscopy Events	Laparoscopy Total	Laparotomy Events	Laparotomy Total	Weight	Odds Ratio M-H, Random, 95% CI
Palomba 2007	5	8	4	8	36.0%	1.67 [0.23, 12.22]
Seracchioli 2000	13	30	21	30	64.0%	0.33 [0.11, 0.95]
Total (95% CI)		**38**		**38**	**100.0%**	**0.59 [0.13, 2.72]**
Total events	18		25			

Heterogeneity: Tau² = 0.66; Chi² = 1.99, df = 1 (P = 0.16); I² = 50%
Test for overall effect: Z = 0.68 (P = 0.50)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Laparotomy Laparoscopy

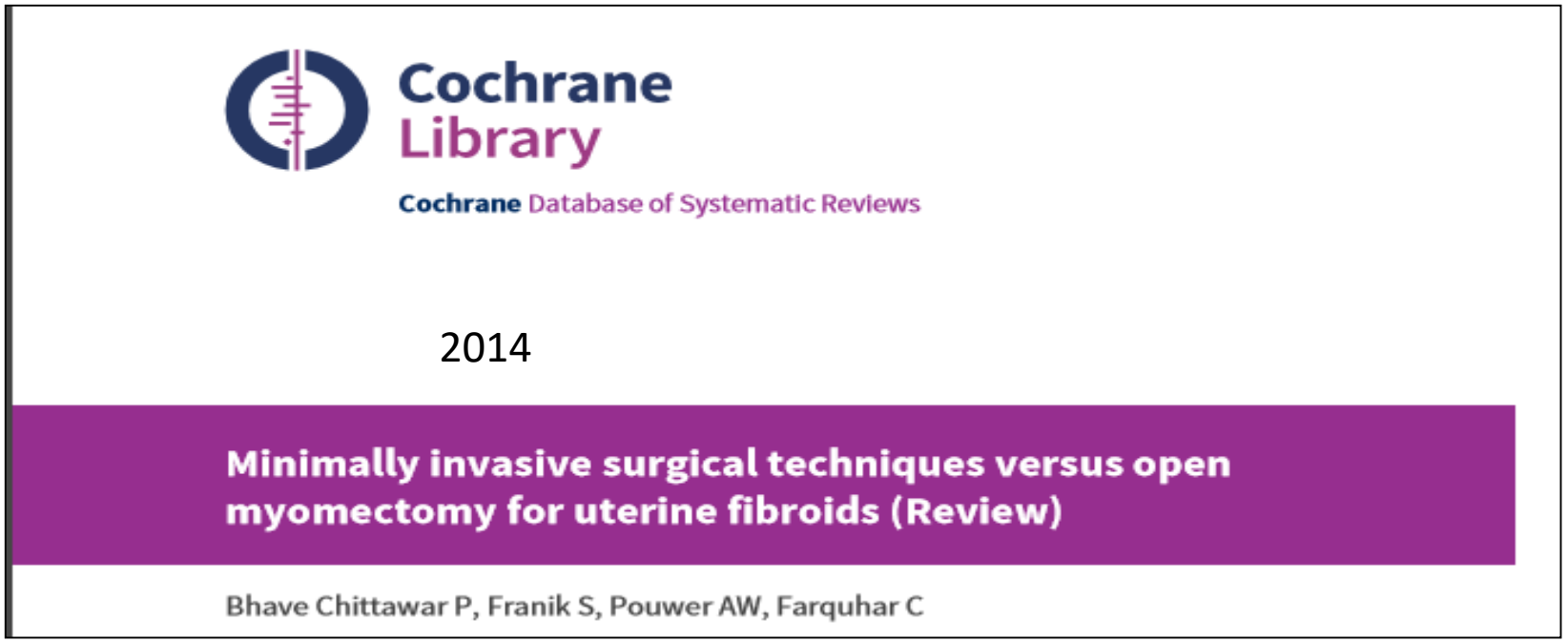
Clinical pregnancy rate

Miscarriage rate

Cesarean section

NO DIFFERENCE

MYOMECTOMIY: LAPAROSCOPY vs. OPEN



9 trials

808 women

Laparoscopy vs. open:

- < pain at 6-48h after surgery
- < postoperative complications
- < hospitalization times

Similar recurrence rates(OR 1.12, 95% CI 0.63 to 1.99).

Reproductive BioMedicine Online (2015) 30, 462–481

www.sciencedirect.com
www.rbmonline.com

REVIEW

Safety and efficacy of the minilaparotomy for myomectomy: a systematic review and meta-analysis of randomized and non-randomized controlled trials

Stefano Palomba [a,*], Eleonora Fornaciari [a], Angela Falbo [a], Giovanni Battista La Sala [a,b]

RBO, 2015

Myomectomy: LAPAROSCOPY vs. MINI-LAP vs. LAP

Surgical time	Mini-lap > lap > lps
HB level	Mini-lap = lps > lap
Ileus postop	Lps > mini-lap > lap
Hospitaliz.	mini-lap =lps > lap

SOGC CLINICAL PRACTICE GUIDELINE

No. 321, March 2015

The Management of Uterine Fibroids in Women With Otherwise Unexplained Infertility

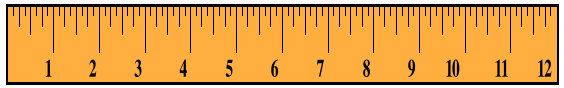
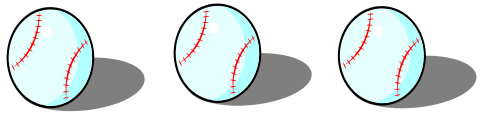
Summary Statement

- In the infertile population, cumulative pregnancy rates by the laparoscopic and minilaparotomy approaches are similar, but the laparoscopic approach is associated with a quicker recovery, less postoperative pain, and less febrile morbidity. (II-2)

Recommendation

- Widespread use of the laparoscopic approach to myomectomy may be limited by the technical difficulty of this procedure. Patient selection should be individualized based on the number, size, and location of uterine fibroids and the skill of the surgeon. (III-A)

PATIENT SELECTION
LIMITS

-  **Volume**
- **Number** 
-  **Location**
- **Surgical experience** 

Surgical risks

Operating time

Surgical approach to Uterine Myomas in women with reproductive expectancies

- Myomas and fertility.
- Does myomectomy improve fertility outcomes
- Surgical technique?
- Strategies to improve surgical outcomes
- And after surgery? Pregnancy after myomectomy

Before Surgery

MEDICAL THERAPY

- stop bleeding
- correct anemia
- improve the quality of life
- decrease the volume of the leiomyomas.

- The surgical approach can be changed if the uterine volume decreases significantly.

- Two medical therapies have proven to be effective in this indication:
- GnRHa and SPRM (ulipristal acetate).

During Surgery

PERIOPERATIVE BLOOD-SAVING TECHNIQUES

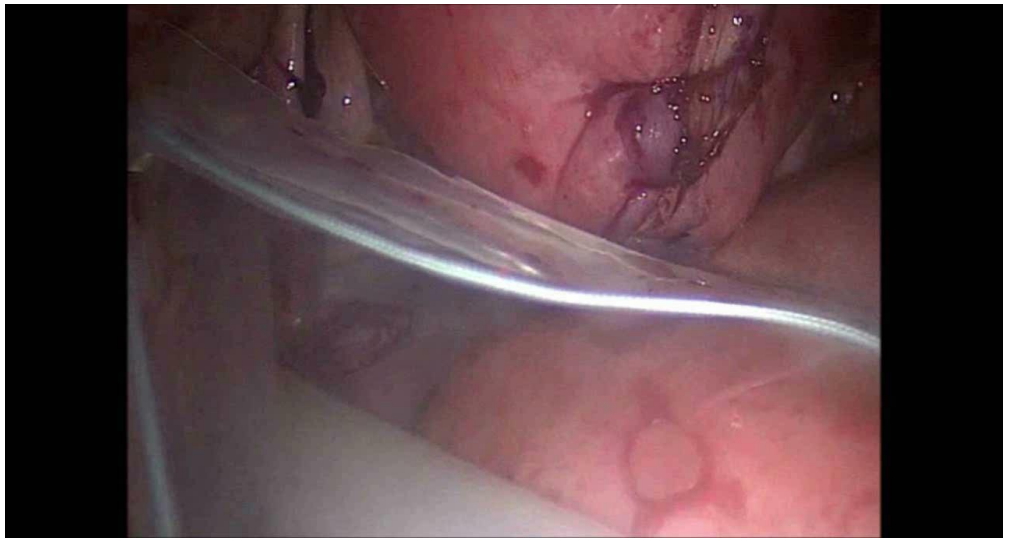
- pericervical “tourniquet” technique
- preoperative embolization
- preventive uterine arteries occlusion
- use uterotonic or vasoconstrictive agents: ocytocine, misoprostol, or sulprostone
- intrauterine injection of vasopressin or epinephrine + bupivacaïne

During Surgery

Alternatives and Other Approaches to Morcellation

- For women undergoing myomectomy, the American College of Obstetricians and Gynecologists recommends a minimally invasive approach whenever feasible.

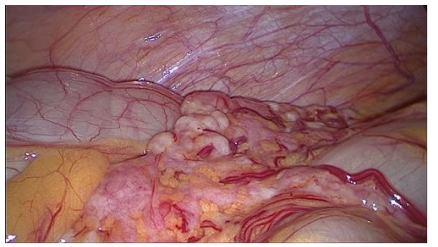
- **Alternative to power morcellation**
- morcellation through suprapubic or umbilical incisions with containment bags
- hand-assisted morcellation through a mini-laparotomy
- vaginal morcellation



Fertility and Sterility

Video of the month (June 2019)

Not only malignancies….



Surgical approach to Uterine Myomas in women with reproductive expectancies

- Myomas and fertility.
- Does myomectomy improve fertility outcomes
- Surgical technique?
- Strategies to improve surgical outcomes
- And after surgery? Pregnancy after myomectomy

And after surgery?

Actually there is no consensus about…

Time to wait for pregnancy	About 4-6 months for IM myomas
Mode of delivery	Not always cesarean section!!!
Risk of uterine rupture	< 1% often III trimester but before labor

Treatment

Obstetric and delivery outcome of pregnancies achieved after laparoscopic myomectomy

Renato Seracchioli, M.D., Linda Manuzzi, M.D., Federico Vianello, M.D., Beatrice Gualerzi, M.D., Luca Savelli, M.D., Roberto Paradisi, M.D., and Stefano Venturoli, M.D.

TABLE 2

Outcome of the 158 pregnancies after laparoscopic myomectomy.

	n	%
Number of pregnancies	158	100.0
Spontaneous abortion	43	27.2
Voluntary abortion	1	0.6
Extra uterine pregnancies	4	2.6
Endo uterine fetal death	1	0.6
Deliveries	106	67.0
Pregnancies in progress	3	1.8

Seracchioli. Obstetric and delivery outcome after LM. Fertil Steril 2006.

TABLE 4

Main features of 106 deliveries after laparoscopic myomectomy.

		n	%
Mode of delivery			
Spontaneous delivery		27	25.5
Operative delivery		0	0
Elective caesarean section		62	58.5
Cesarean section on emergency		17	16.0
Fetal distress		8	
Premature rupture of membranes		2	
Dynamic dystocia		6	
Gestational hypertension		1	
Perinatal outcome			
Gestational age (wk)	38.20 ± 1.28		
Premature delivery <36 wk		2	2
Ended delivery >36 wk		104	98.1
Intrauterine fetal death		1	0.9
Obstetric complications			
Uterine rupture		0	0
Postpartum hemorrhage		0	0
Hysterectomy (elective postcesarean)		1	0.9

Seracchioli. Obstetric and delivery outcome after LM. Fertil Steril 2006.

LPS myomectomy performed by an expert surgeon can restore reproductive capacity, allowing patients to have a successful pregnancy

Fertility and Sterility® Vol. 86, No. 1, July 2006

THE JOURNAL OF
Obstetrics and Gynaecology Research
doi:10.1111/jog.13924 J. Obstet. Gynaecol. Res. Vol. 45, No. 4: 763–765, April 2019

National survey of uterine rupture in Japan: Annual report of Perinatology Committee, Japan Society of Obstetrics and Gynecology, 2018

Shintaro Makino[1,2], Satoru Takeda[1,2], Eiji Kondoh[1,3], Kenta Kawai[1,4], Jun Takeda[2], Shigeki Matsubara[1,5], Atsuo Itakura[1,2], Haruhiko Sago[1,6], Shinji Tanigaki[1,7], Mamoru Tanaka[1,8], Tomoaki Ikeda[1,9] and Naohiro Kanayama[1,4]

Table 1 Details of uterine rupture during pregnancy

Surgery	*n* (%)	Median (weeks)	Hysterectomy, *n* (%)	Apgar score ≤ 6, *n* (%)	UmApH ≤ 7.1, *n* (%)	UmABE ≤ 12, *n* (%)	Cerebral palsy, *n* (%)	Neonatal death, *n* (%)
Cesarean section	74 (48.7)	37.0	5 (6.8)	8 (10.8)	8 (10.8)	5 (6.8)	0	4 (5.4)
Myomectomy								
Abdominal	7 (4.6)	32.3	0	0	0	0	0	2 (28.6)
Laparoscopic	17 (11.2)	32.5	3 (17.6)	3 (17.6)	3 (17.6)	1 (5.9)	0	3 (17.6)
Adenomyomectomy								
Abdominal	3 (2.0)	30.0	2 (66.7)	0	0	0	0	0
Laparoscopic	4 (2.6)	32.0	1 (25.0)	—	—	—	2 (50.0)	2 (50.0)
Unscarred	40 (26.3)	39.0	21 (52.5)	10 (25)	10 (25)	4 (10)	5 (12.5)	7 (17.5)

UmABE, umbilical arterial blood base excess; UmApH, umbilical arterial blood pH.

- 152 cases (in 5 years) of uterine rupture with an incidence rate of 0.015%.
- week of occurrence of uterine ruptures
  unscarred 39.0 weeks, cesarean section 37.0 weeks, myomectomy 32 weeks, adenomyomectomy 30–32 weeks.

AOGS
Acta Obstetricia et Gynecologica Scandinavica

AOGS REVIEW ARTICLE

Trial of labor after myomectomy and uterine rupture: a systematic review

ZITA GAMBACORTI-PASSERINI[1], ALEXIS C. GIMOVSKY[2], ANNA LOCATELLI[1] & VINCENZO BERGHELLA[2]

[1]Department of Obstetrics and Gynecology, University of Milan Bicocca, Milan, Italy, and [2]Division of Maternal Fetal Medicine, Department of Obstetrics and Gynecology, Sidney Kimmel College of Medicine, Thomas Jefferson University, Philadelphia, PA, USA

Table 2. Rate of uterine rupture in eleven studies that reported detailed data about trial of labor after myomectomy.

Author	Year	Pregnancies	Pregnancy after myomectomy	Deliveries (≥24 weeks)	UR before TOLAM	TOLAM	UR in TOLAM
Dubuisson (16)	2000	145	All subsequent	100	2/28	72/100	0/72
Seracchioli (18)	2000	63	Not specified	47	0/25	22/47	0/22
Dessolle (19)	2001	44	All subsequent	34	0/4	30/34	0/30
Seracchioli (24)	2006	158	All subsequent	106	0/65	41/106	0/41
Palomba (26)	2007	62	1st pregnancy only	54	0/19	35/54	0/35
Makino (27)	2008	109	Not specified	109	0/45	64/109	0/64
Kelly (28)	2008	93	All subsequent	93	1/38	55/93	0/55
Kumakiri (8)	2008	221	1st pregnancy only	111	0/37	74/111	0/74
Lonnerfors (29)	2011	18	All subsequent	10	0/4	6/10	0/6
Kim (31)	2013	66	Not specified	53	0/47	6/53	0/6
Bernardi (32)	2014	55	All subsequent	39	2/18	21/39	2/21
Total		1034		756	**1.52%** (5/330)	**56.35%** (426/756)	**0.47%** (2/426)

TOLAM, Trial of labor after myomectomy; UR, uterine rupture.

Leiomyomatous uterus and preterm birth: an exposed/unexposed monocentric cohort study

Aude Girault, MD; Camille Le Ray, MD, PhD; Charles Chapron, MD, PhD; François Goffinet, MD, PhD; Louis Marcellin, MD, PhD

OCTOBER 2018 American Journal of Obstetrics & Gynecology 410.e2

TABLE 2
Comparison of pregnancy outcomes and characteristics of delivery between groups of leiomyomatous uterus and nonleiomyomatous uterus, n = 19,866

Pregnancy outcomes and characteristics of delivery	Leiomyomatous uterus n = 301	Nonleiomyomatous uterus n = 19,565	*P*
Medical pathology during pregnancy, n (%)			
Gestational hypertension	21 (7.0)	288 (1.5)	<.001
Gestational diabetes	53 (17.6)	1477 (7.6)	<.001
Other significant medical pathology	0 (0)	4743 (24.4)	NA
Obstetrical pathology during pregnancy, n (%)			
PPROM ± TPD	14 (4.7)	845 (4.3)	.8
Preeclampsia	19 (6.3)	480 (2.4)	<.001
Placenta previa	15 (5.0)	146 (0.8)	<.001
Gestational age at rupture of membrane, WG, mean ± SD	36.7 ± 3.0	37.0 ± 9.1	.59
At least 1 hospitalization during pregnancy, n (%)	116 (38.5)	5721 (29.2)	<.001
Type of onset of labor, n (%)			
Spontaneous	138 (45.9)	13,200 (67.5)	<.001
Induction	48 (15.9)	4126 (21.1)	
Cesarean before labor	115 (38.2)	2153 (11.0)	
Delivery <37 WG, n (%)	36 (12.0)	1650 (8.4)	.03
Delivery <34 WG, n (%)	23 (7.6)	811 (4.1)	.003
Type of preterm birth, n (%)			.05
Spontaneous birth <37 WG	15 (5.0)	820 (4.2)	
Induced preterm birth <37 WG	21 (7.0)	830 (4.2)	
Fetal presentation, n (%)			<.001
Cephalic	255 (84.7)	18,369 (93.9)	
Breech	35 (11.6)	928 (4.7)	
Transverse lie	11 (3.7)	96 (0.5)	
Face or brow	0 (0.0)	33 (0.2)	
Type of delivery, n (%)			<.001
Spontaneous	122 (40.5)	12,952 (66.2)	
Operative vaginal	19 (6.3)	1961 (10.0)	
Cesarean	160 (53.2)	4644 (23.8)	
PPH, n (%)	47 (15.6)	1077 (5.5)	<.001
Peripartum transfusion, n (%)	20 (6.6)	89 (0.5)	<.001

NA, not applicable; *PPH*, postpartum hemorrhage; *PPROM*, preterm premature rupture of membranes; *TPD*, threatened premature delivery; *WG*, weeks of gestation.
Girault et al. Leiomyomatous uterus and preterm birth. Am J Obstet Gynecol 2018.

There must always be an indication for surgery

The first great error in surgery is to operate unnecessarily

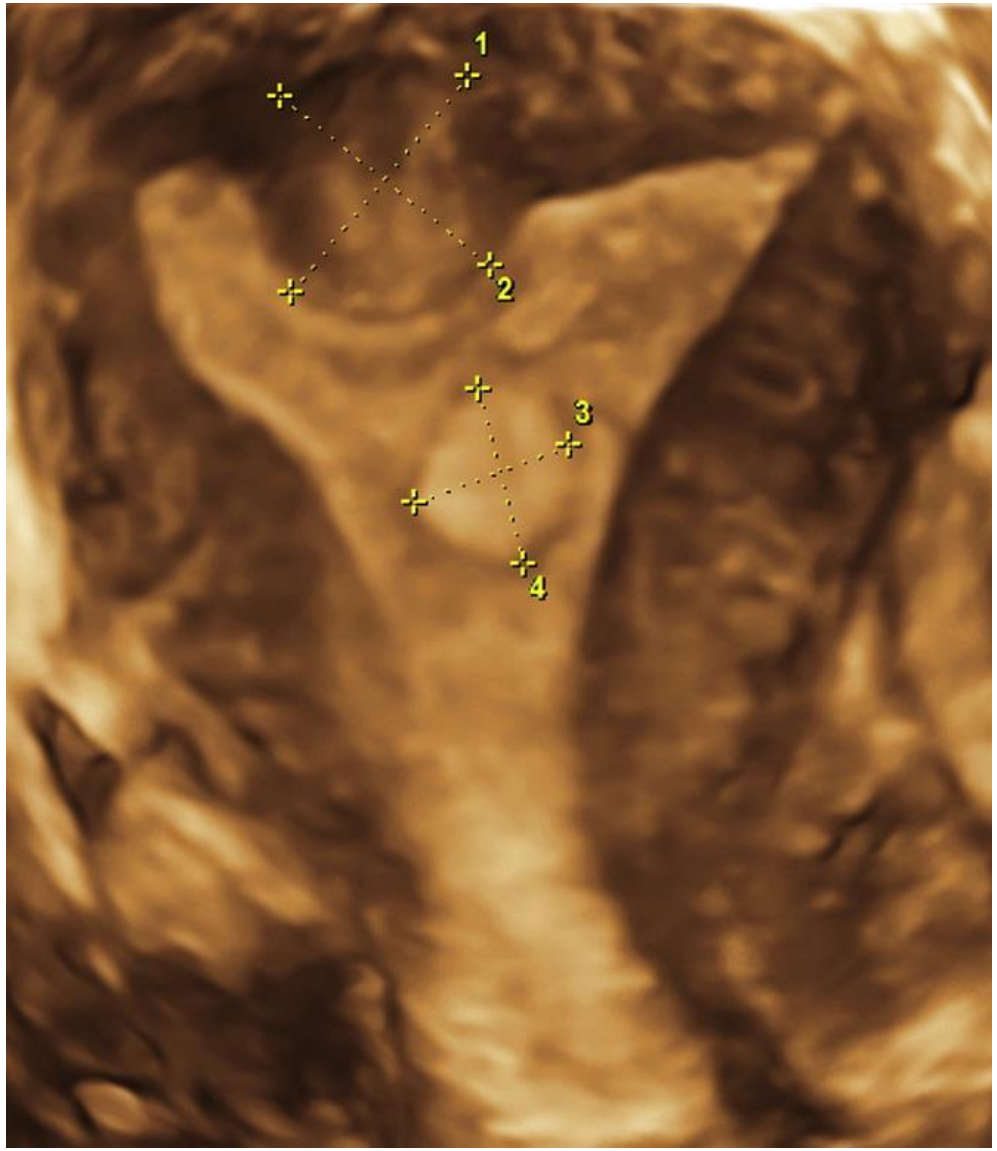
The second, to undertake an operation for which the surgeon is not sufficiently skilled technically

- Max Thorek, 1880-1960


THANK YOU

- Endometrial receptivity and embryo imlantation
- Fibroids and fertility
- Which fibroids may affect fertility?
- Wich fibroids have to be removed?
- How fibroids have to be removed?Wich surgical technique?
- Different surgical strategies
- And after surgery? Pregnancy after myomectomy
- Variables

Impact on fertility



SUBMUCOSAL

- ✓ Uterine cavity distortion
- ✓ Abnormally increased uterine contractility
- ✓ Abnormal vascularization
- ✓ Disturbances in endometrial cytokine expression
- ✓Chronic endometrial inflammation
- ✓Difficult implantation

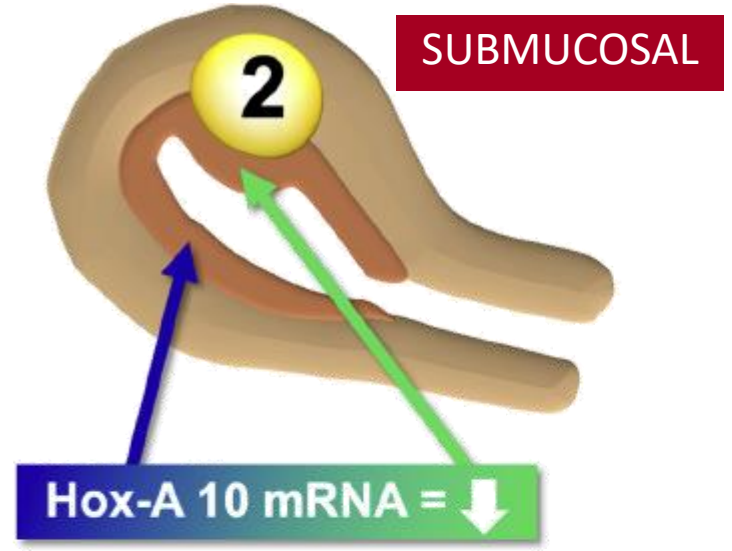
From Munro et al, Fert Ster, 2019

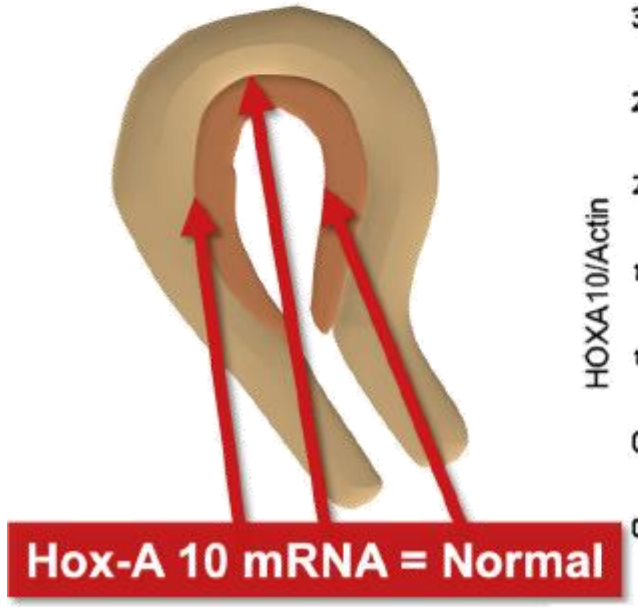
Impact on fertility

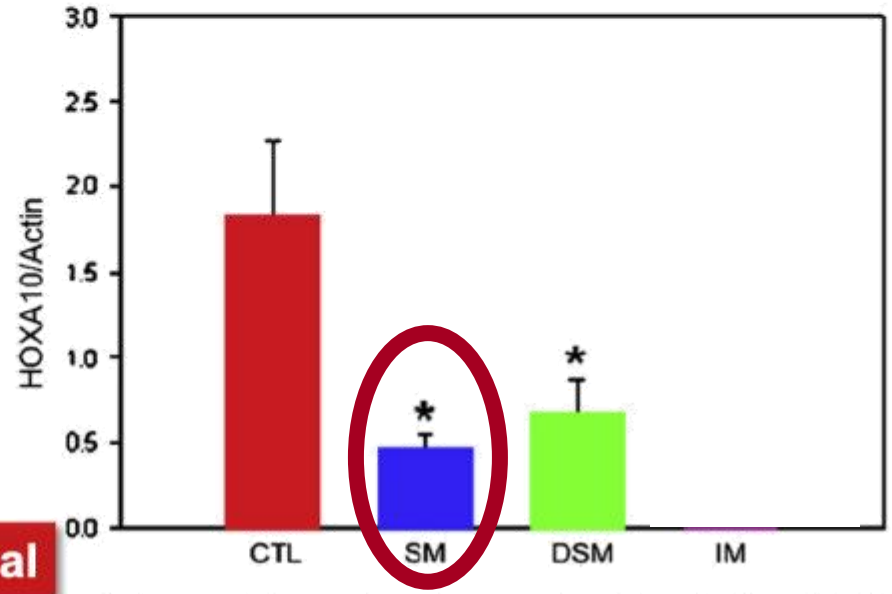
Endometrial Hox-A10 messenger RNA expression

↓

Involved in decidualization and implantation







Adapted from Rackow et al Fertil Steril 2010

From Munro et al, Fert Ster, 2019

In case of symptomatic uterine leiomyomas, medical, surgical, or radiological therapies may
be chosen depending on a range of criteria:
- the age,
- the desire to become pregnant,
- the desire to preserve the uterus,
- the number, the size and the location of the leiomyomas,
- the main symptom,
- the comorbidities,
- the anticipated surgical difficulties (multiple prior surgeries, multiple myomectomies),
- the level of experience of the therapist.

Miomectomia e PMA

Myomas, Pregnancy Outcome, and *In Vitro* Fertilization

CARLO BULLETTI,[a] DOMINIQUE DE ZIEGLER,[b] PAOLO LEVI SETTI,[c] ETTORE CICINELLI,[d] VALERIA POLLI,[a] AND MARCO STEFANETTI[a]

TABLE 2. Effect of surgical removal of myomas on IVF success rates

	Cumulative pregnancy rate *N* (% cases)	Delivery rate *N* (% cases)	Abortion rate *N* (% pregnancies)
Miomectomia LPS	28 (34)	21 (25)	8 (7)
Miomi NON rimossi	13 (15)	10 (12)	3(4)
	<.05	<.05	Not significant

Miomectomia laparoscopica in pazienti con miomi IM e SS maggiori di 5 cm ha effetti positivi sul cumulative pregnancy rate e sul delivery rate

Laparoscopic myomectomy: surgical outcomes

European Journal of Obstetrics & Gynecology and Reproductive Biology 145 (2009) 14–21

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

Review

Laparoscopic versus open myomectomy—A meta-analysis of randomized controlled trials

Description of studies.

Author	Year	Grouping LM vs. OM	Follow-up	Mean age (year) LM vs. OM	No. of myomas (n) LM vs. OM	Diameter of the largest one (cm) LM vs. OM	Location
Mais V.	1996	20 vs. 20	6 months	34.3 ± 6.3 vs. 33.8 ± 5.7	–(1–4) vs. –(1–4)	–(3–6) vs. –(3–6)	SS, IM
Seracchioli R.	2000	66 vs. 65	18 months	34 ± 4.11 vs. 33.97 ± 4.79	–	–	SS, IM
Holzer A.	2006	19 vs. 21	52 months	40(31–45) vs. 40(28–49)	2(1–4) vs. 3(1–7)	7(4–10) vs. 5(3–11)	IM
Alessandri F.	2006	74 vs. 74	6 months	37.5 ± 4.5 vs. 38.4 ± 4.9	–	–	SS, IM
Rossetti A.	2001	41 vs. 40	40 months	35 ± 5 vs. 35 ± 3	–(1–7) vs. –(1–7)	–	SS, IM
Stefano	2007	68 vs. 68	12 months	28(21–36) vs. 28(22–38)	1(1–3) vs. 1(1–3)	7.6(5.7–9.8) vs. 7.8(5.5–9.7)	SS, IM

2009

The objective of this study was to determine the better method of myomectomy by comparing laparoscopic and open myomectomy for patients with fibroids with regard to operative parameters and outcomes.

A systematic review was performed on published studies identified by the databases PubMed, EMBASE, the China Biological Medicine Datadase (CBMdisc), Ovid and the Cochrane Library, as well as cross-references. Randomized controlled trials on laparoscopic versus open myomectomy were assessed on operative parameters and outcomes. Six studies and 576 patients were studied. Analysis was performed using the statistical software Review Manager Version 4.2. The data available show that laparoscopic myomectomy was associated with less hemoglobin drop, reduced operative blood loss, more patients fully recuperated at day 15, diminished postoperative pain, and fewer overall complications but longer operation time. However, major complications, pregnancy and recurrence were comparable in the two groups.

The data show that if performed by suitably specialized surgeons in selected patients, laparoscopic myomectomy is a better choice than open surgery.

Miomectomia Laparoscopica

La miomectomia può determinare importanti complicanze:
-infezioni
- danni a organi interni (intestino, vescica, ureteri)
-sanguinamento e/o emotrasfusione
-aderenze post operatorie
-rischio di rottura d'utero durante la gravidanza e al parto
-aumentato rischio di taglio cesareo

- Minor dolore post operatorio

Luciano, 2009

Miomectomia Laparoscopica: Outcomes Chirurgici

Studio italiano sulle complicanze della miomectomia laparoscopica

Tra le più vaste casistiche di casi di miomectomia laparoscopica e la più ampia sulle complicanze

N° 2050 interventi di miomectomia laparoscopica (singola o multipla)

Rischio di complicanze stimato in relazione a:

- Posizione del mioma: intramurale profondo (p< 0.5) o infra-legamentario (p< 0.1)
- N° miomi >3 (p<0.001)
- Dimensioni → per complicanze maggiori dimensioni > 7 cm (p < 0.001)

SE EFFETTUATA DA UN CHIRURGO ESPERTO, la miomectomia LPS può esere considerata una tecnica sicura con un tasso di fallimento estremamente basso e con buoni risultati in termini di outcome riproduttivo

Sizzi et al.2007

Surgical treatment of fibroids for subfertility (Review)

Metwally M, Cheong YC, Horne AW

2012

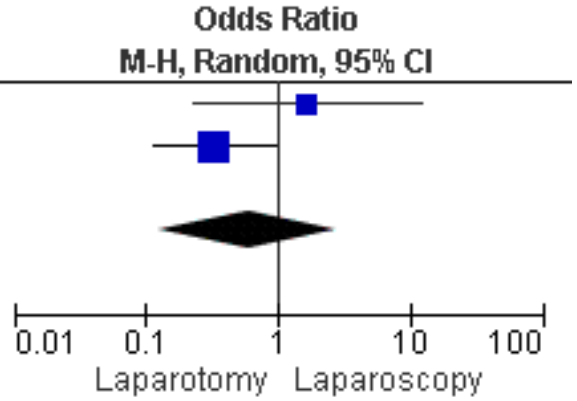
THE COCHRANE COLLABORATION®

Quale tecnica chirurgica per migliorare gli outcome riproduttivi?

Study or Subgroup	Laparoscopy Events	Laparoscopy Total	Laparotomy Events	Laparotomy Total	Weight	Odds Ratio M-H, Random, 95% CI
Palomba 2007	5	8	4	8	36.0%	1.67 [0.23, 12.22]
Seracchioli 2000	13	30	21	30	64.0%	0.33 [0.11, 0.95]
Total (95% CI)		**38**		**38**	**100.0%**	**0.59 [0.13, 2.72]**
Total events	18		25			

Heterogeneity: $Tau^2 = 0.66$; $Chi^2 = 1.99$, $df = 1$ ($P = 0.16$); $I^2 = 50\%$

Test for overall effect: $Z = 0.68$ ($P = 0.50$)



Caesarean section rate non è influenzata dalla tecnica chirurgica

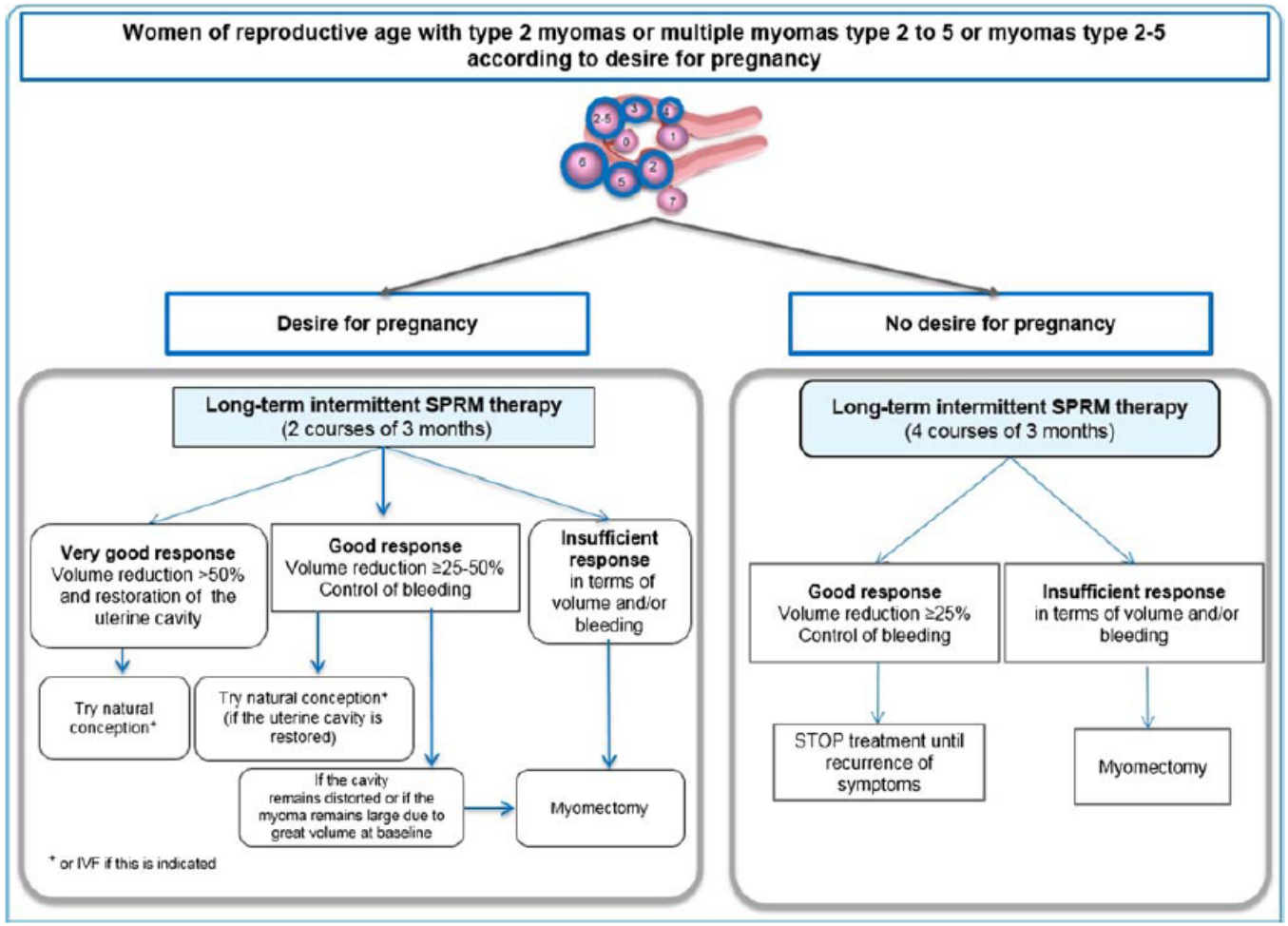


Figure 9 Management in case of myomas or multiple myomas (type 2–5) in women of reproductive age, according to desire for pregnancy. In cases of infertility, two courses of three months are recommended (left panel). Subsequent therapy is determined depending on the response to treatment and restoration of the uterine cavity. If there is no desire to conceive (right panel), long–term (four courses) intermittent therapy may be proposed. In case of a good response in terms of fibroid volume reduction and bleeding, treatment is stopped and only restarted if symptoms recur. Fibroid classification cartoon republished with permission from Munro *et al.* (2011).

Impact on fertility

Fibroids and infertility: an updated systematic review of the evidence

Elizabeth A. Pritts, M.D.,[a] William H. Parker, M.D.,[b] and David L. Olive, M.D.[a]

TABLE 2

Effect of fibroids on fertility: all locations.

Outcome	Number of studies/substudies	Relative risk	95% confidence interval	Significance
Clinical pregnancy rate	18	0.849	0.734–0.983	*P*=.029
Implantation rate	14	0.821	0.722–0.932	*P*=.002
Ongoing pregnancy/live birth rate	17	0.		
Spontaneous abortion rate	18	1.		
Preterm delivery rate	3	1.		

Pritts. Fibroids and infertility. Fertil Steril 2009.

TABLE 5

Effect of fibroids on fertility: intramural fibroids.

Outcome	Number of studies/ substudies	Relative risk	95% confidence interval	Significance
A. All studies				
Clinical pregnancy rate	12	0.810	0.696–0.941	*P*=.006
Implantation rate	7	0.684	0.587–0.796	*P*<.001
Ongoing pregnancy/live birth rate	8	0.703	0.583–0.848	*P*<.001
Spontaneous abortion rate	8	1.747	1.226–2.489	*P*=.002
Preterm delivery rate	1	6.000	0.309–116.606	Not significant
B. Prospective studies				
Clinical pregnancy rate	3	0.708	0.437–1.146	Not significant
Implantation rate	2	0.552	0.391–0.781	*P*=.001
Ongoing pregnancy/live birth rate	2	0.465	0.291–0.744	*P*=.019
Spontaneous abortion rate	2	2.384	1.110–5.122	*P*=.002
Preterm delivery rate	0	—	—	—
C. Studies using hysteroscopy in all subjects				
Clinical pregnancy rate	2	0.845	0.666–1.071	Not significant
Implantation rate	1	0.714	0.547–0.931	*P*=0.013
Ongoing pregnancy/live birth rate	2	0.733	0.383–1.405	Not significant
Spontaneous abortion rate	2	1.215	0.391–3.774	Not significant
Preterm delivery rate	1	6.000	0.309–116.606	Not significant

Pritts. Fibroids and infertility. Fertil Steril 2009.

		Relative risk	95% confidence interval	Significance
		0.897	0.800–1.004	Not significant
Implantation rate	14	0.792	0.696–0.901	*P*<.001
Ongoing pregnancy/live birth rate	16	0.780	0.690–0.883	*P*<.001
Spontaneous abortion rate	16	1.891	1.473–2.428	*P*<.001
Preterm delivery rate	2	2.767	0.797–9.608	Not significant

Pritts. Fibroids and infertility. Fertil Steril 2009.

Removal of myomas in asymptomatic patients to improve fertility and/or reduce miscarriage rate: a guideline

Practice Committee of the American Society for Reproductive Medicine

The American Society for Reproductive Medicine, Birmingham, Alabama

- Non ci sono evidenze sufficienti per concludere che la presenza di miomi riduca la probabilità di gravidanza con o senza trattamenti per la fertilità (grado C)
- Non ci sono evidenze sufficienti per determinare chiaramente quali tipi di mioma abbiano maggiore impatto sulla fertilità e sul rischio di aborto spontaneo
- Non ci sono evidenze sufficienti che la rimozione dei miomi sottosierosi migliori la fertilità (grado C)
- Ci sono evidenze che la miomectomia non migliori in maniera statisticamente significativa il tasso di successo di ART. (grado B)
- Non ci sono evidenze sufficienti che la miomectomia laparoscopica o laporotomica riduca il tasso di aborto spontaneo.
- Ci sono evidenze sufficienti per affermare che la miomectomia isteroscopica migliori il il *clinical pregnancy rates* (grado B)
- Viceversa, non ci sono evidenze per affermare che tale procedura riduca il rischio di aborto spontaneo. (grado C)

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Removal of myomas in asymptomatic patients to improve fertility and/or reduce miscarriage rate: a guideline

Practice Committee of the American Society for Reproductive Medicine
The American Society for Reproductive Medicine, Birmingham, Alabama

RACCOMANDAZIONI:

- In donne asintomatiche con miomi CHE ALTERANO LA CONFORMAZIONE DELLA CAVITÀ UTERINA la miomectomia (laparoscopica, laparotomica o isteroscopica) può essere presa in considerazione per migliorare il tasso di successo riproduttivo.
- La miomectomia solitamente non è consigliata per aumentare il tasso di successo riproduttivo in donne infertili asintomatiche con miomi che non distorcono la cavità uterina.

ORIGINAL ARTICLE: GYNECOLOGY

Reintervention risk and quality of life outcomes after uterine-sparing interventions for fibroids: a systematic review and meta-analysis

Evelien M. Sandberg, M.D.,[a] Fokkedien H. M. P. Tummers,[a] Sarah L. Cohen, M.D., M.P.H.,[b] Lukas van den Haak, M.D.,[a] Olaf M. Dekkers, M.D., Ph.D.,[c] and Frank Willem Jansen, M.D., Ph.D.[a,d]

[a] Department of Gynecology, Leiden University Medical Center, Leiden, the Netherlands; [b] Department of Gynecology, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts; [c] Department of Clinical Epidemiology and Internal Medicine, Leiden University Medical Center, Leiden, the Netherlands; and [d] Department of Biomechanical Engineering, Delft University of Technology, Delft, the Netherlands

Objectives: To compare uterine-sparing treatment options for fibroids in terms of reintervention risk and quality of life.
Design: Systematic review and meta-analysis according to PRISMA guidelines.
Setting: Not applicable.
Patient(s): Women with uterine fibroids undergoing a uterine-sparing intervention.
Interventions(s): Not applicable.
Main Outcome Measure(s): 1) Reintervention risk after uterine-sparing treatment for fibroids after 12, 36, and 60 months; and 2) quality of life outcomes, based on validated questionnaires. Two separate analyses were performed for the procedures that used an abdominal approach (myomectomy, uterine artery embolization [UAE], artery ligation, high-intensity focused ultrasound [HIFU], laparoscopic radiofrequency ablation [RFA]) and for the procedures managing intracavitary fibroids (hysteroscopic approach, including hysteroscopic myomectomy and hysteroscopic RFA).
Result(s): There were 85 articles included for analysis, representing 17,789 women. Stratified by treatment options, reintervention risk after 60 months was 12.2% (95% confidence interval [CI] 5.2%–21.2%) for myomectomy, 14.4% (95% CI 9.8%–19.6%) for UAE, 53.9% (95% CI 47.2%–60.4%) for HIFU, and 7% (95% CI 4.8%–9.5%) for hysteroscopy. For the other treatment options, no studies were available at 60 months. For quality of life outcomes, symptoms improved after treatment for all options. The HIFU procedure had the least favorable outcomes.
Conclusion(s): Despite the substantial heterogeneity of the study population, this meta-analysis provides valuable information on relative treatment efficacy of various uterine-sparing interventions for fibroids, which is relevant when counseling patients in daily practice. Furthermore, this study demonstrates that long-term data, particularly for the newest uterine-sparing interventions, are urgently needed. (Fertil Steril® 2018;109:698–707. ©2017 by American Society for Reproductive Medicine.)
Key Words: Reintervention risk, quality of life, uterine-sparing treatment option

OBSTETRICS

Perspectives of Obstetricians on Labour and Delivery After Abdominal or Laparoscopic Myomectomy

Hélène S. Weibel, MD,[1] Radomir Jarcevic, MD,[2] Robert Gagnon, MD,[1] Togas Tulandi, MD, MHCM[1]

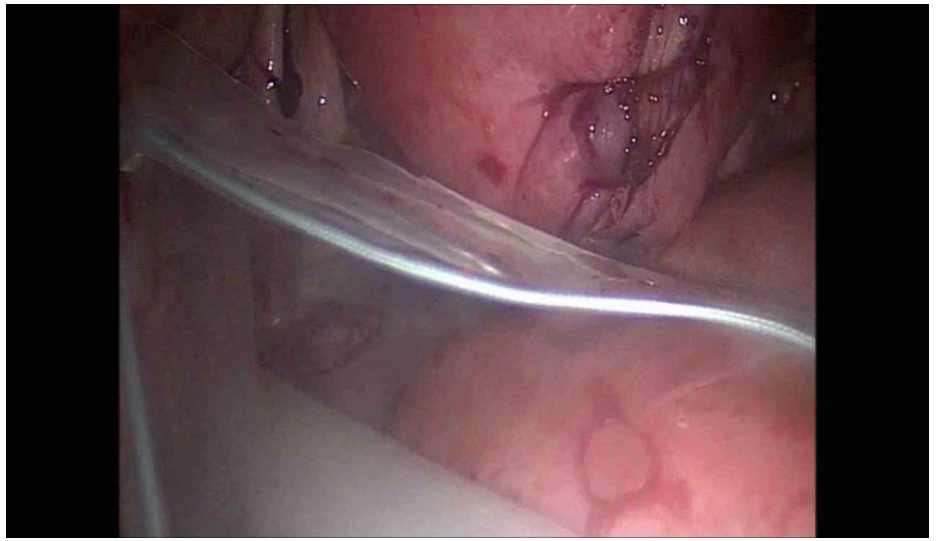
[1]Department of Obstetrics and Gynecology, McGill University, Montreal QC

[2]Department of Obstetrics and Gynecology, Université de Montréal, Montreal QC

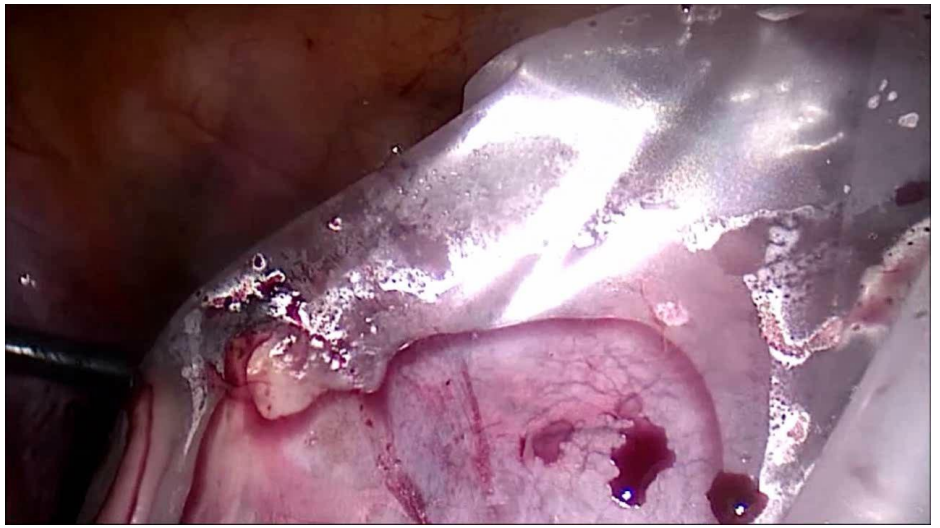
Survey a medici che si occupano soprattutto di Ostetricia, 2014

Alternatives and Other Approaches to Morcellation

- For women undergoing hysterectomy for benign disease, the American College of Obstetricians and Gynecologists recommends a minimally invasive approach whenever feasible.
- **Alternative to power morcellation**



- morcellation through suprapubic or umbilical incisions with containment bags
- hand-assisted morcellation through a mini-laparotomy
- vaginal morcellation



Before Surgery

MEDICAL THERAPY

- Purpose >
  stop bleeding
  correct anemia
  improve the quality of life
  decrease the volume of the leiomyomas.
- The surgical approach can be changed if the uterine volume decreases significantly, making a laparoscopy route possible when a laparotomy was scheduled initially.

- Two medical therapies have proven to be effective in this indication:
- GnRHa and SPRM (ulipristal acetate).
- Valaprisan, a novel promising powerful SPRM, is currently under investigation in phase III studies.